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TRANSPOSITION FLAPS OF INEXTENSIBLE SKIN SUCH AS THE SCALP

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The classical design of a transposition flap (Fig. 1) (McGregor, 1972) depends for its success on the elasticity and extensibility of most areas of human skin. But in areas of inextensible, inelastic skin such as the scalp, problems arise. Since the pivot point is E, and EA and EB are equal, AD is longer than BD and when sutured together a fold is formed at D which can be a nuisance on the scalp. In addition any point on AC is a shorter distance from E than either A or B and when the flap is rotated and sutured increased tension is imposed on the flap along AC.

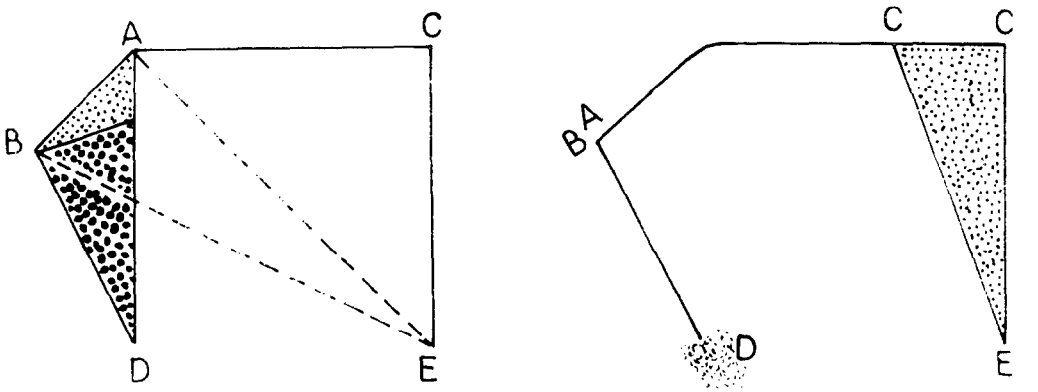

FIG. 1. The classical design of a transposition flap. It depends for its success on relatively elastic and extensible skin.

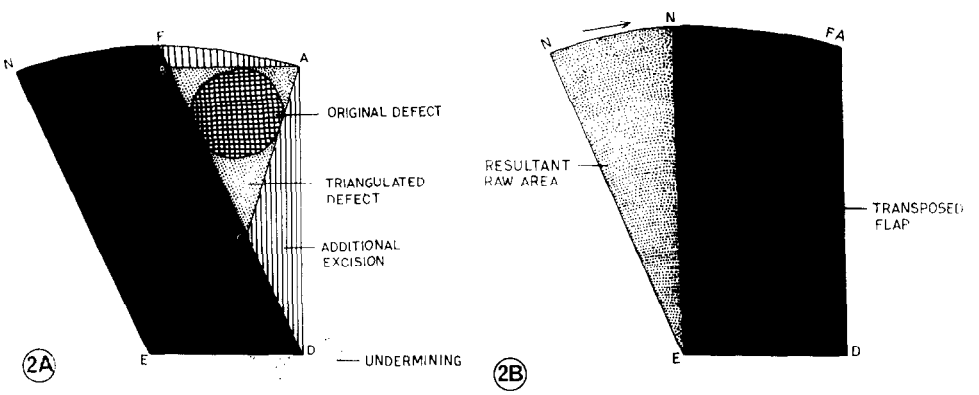

FIG. 2. A. Design for a transposition flap on inelastic skin such as the scalp. B. After transposing. For details see text.

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To obviate these faults the following flap has been designed (Fig. 2). The original defect is transformed into an isosceles triangle whose direction depends on the availability of skin and where it it proposed to raise the flap. Now draw AD at right angles to the base of the triangle, the point D being where the prolongation of BC meets the vertical. The base of the flap DE is at right angles to DA and as a rule is longer than BA depending on the location of the flap and the availability of the skin. A curve is next drawn with E as the centre and EA as the radius and the flap DENF is outlined.

Although this design involves the excision of excess normal skin, DF is not much longer than DA and a fold at D does not occur, particularly where the area has been undermined. The angle closed at D is small and a standing cone (Limberg, 1966) is not formed. In addition, each point on the arc NFA is equidistant from E and there is no increased tension on the flap when it is sutured in its new position.

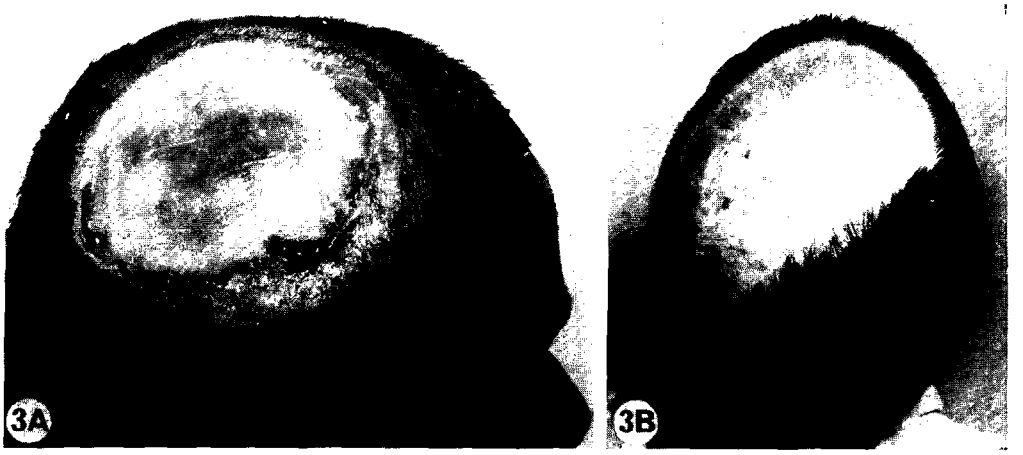

FIG. 3. A. Preoperative view of defect. B. Postoperative view of transposed flap.

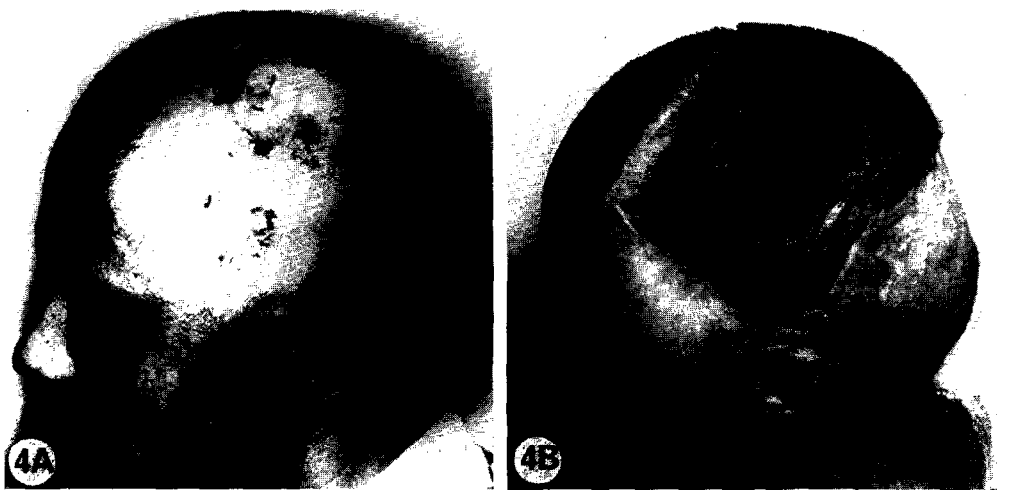

FIG. 4. A. Preoperative view of defect. B. Postoperative view of transposed flap.

FIG. 5. A. Preoperative view of defect. B. Postoperative view of transposed flap.

Transposition flaps designed thus have been used in 6 patients having defects in the scalp following excisions for malignancy, scalp avulsions, and electrical burns. In all these, tension free, accurate skin closure without skin folds or dog-ears around the base was achieved avoiding any haematoma collection. Typical examples are shown in Figures 3, 4 and 5.

REFERENCES

LIMBERG, A. A. (1966). Design of local flaps, in "Modern Trends in Plastic Surgery", p. 38. Edited by Gibson, T. London: Butterworths.

MCGREGOR, I. A. (1972). The transposed flap, in "Fundamental Techniques of Plastic Surgery". London: Churchill Livingstone.